

Arp 18th 2025

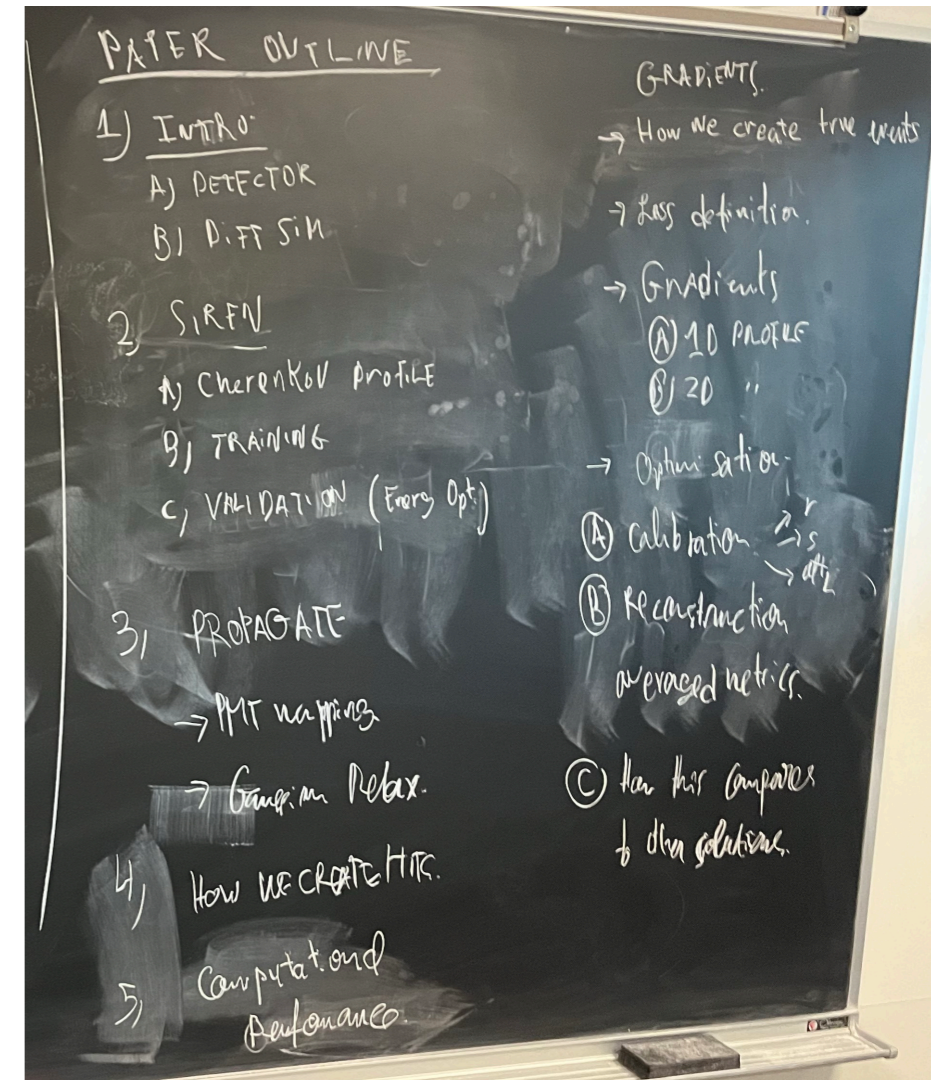
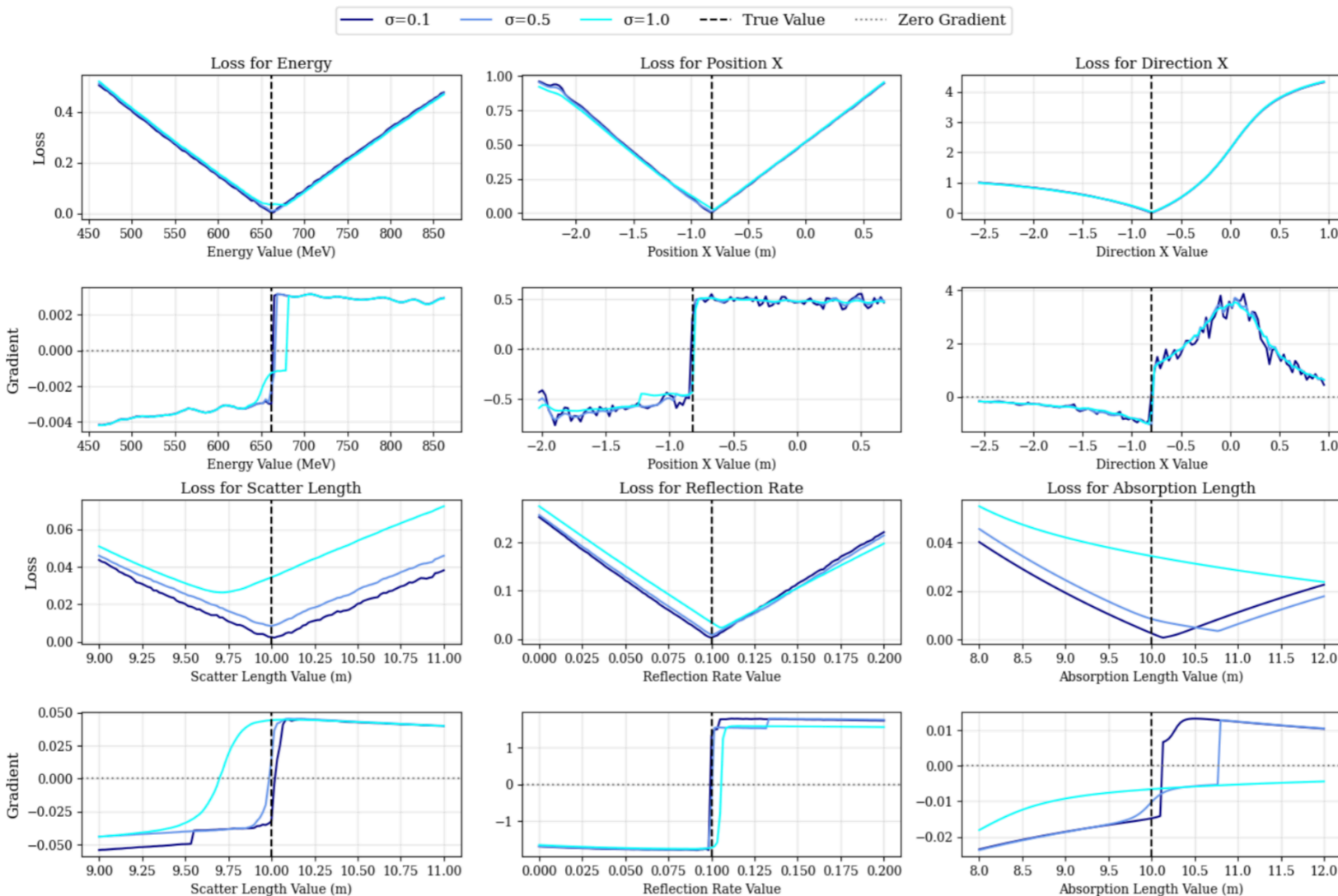
CIDER-ML

CM summary

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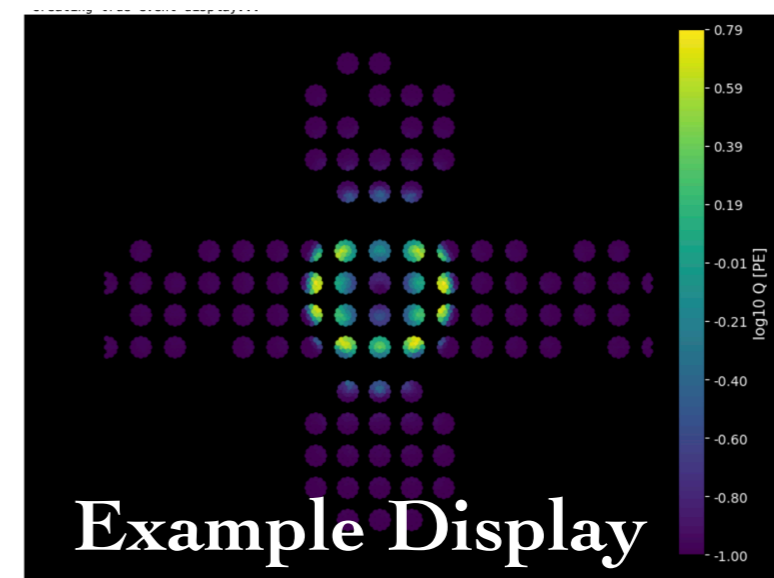
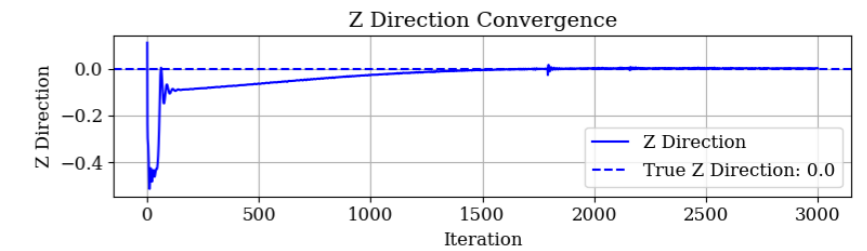
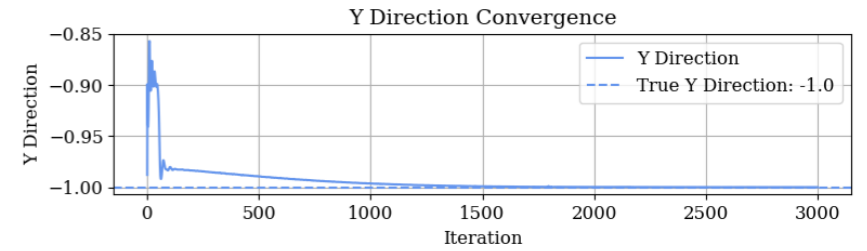
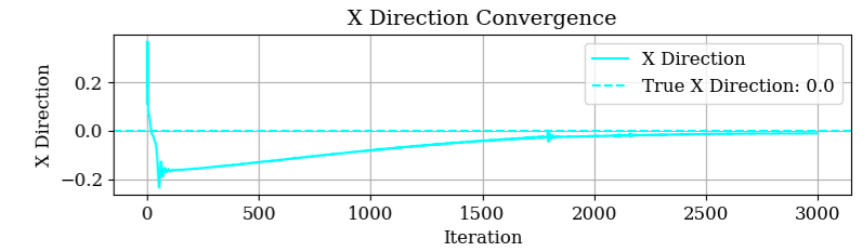
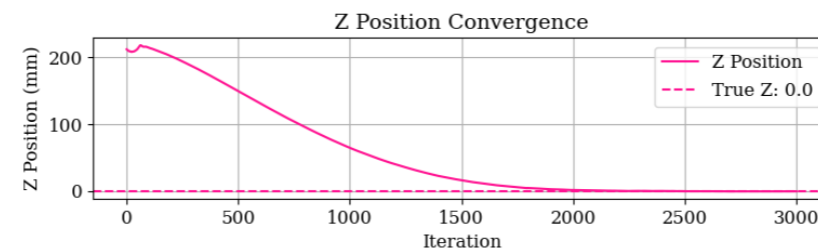
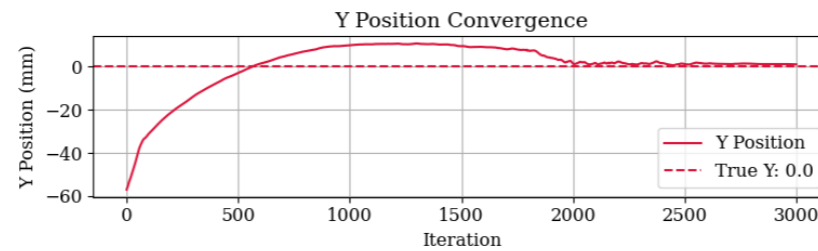
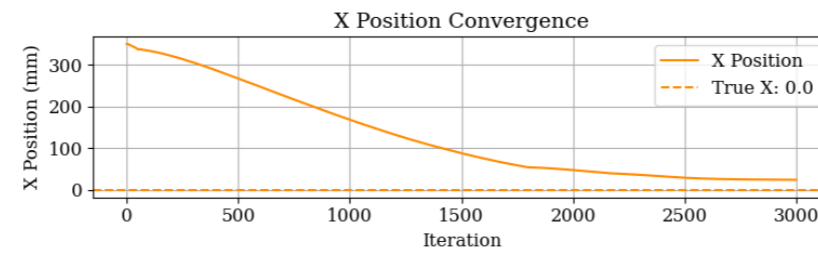
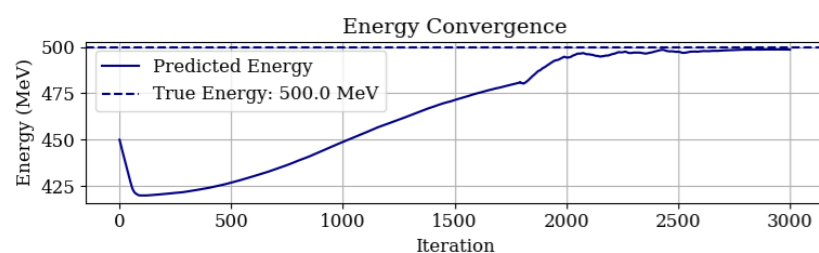
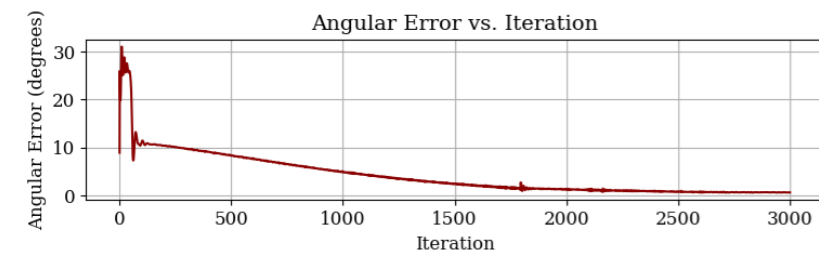
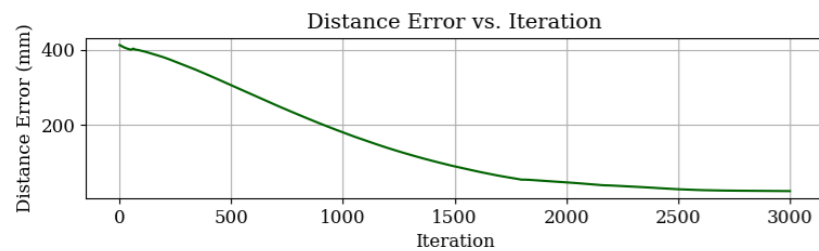
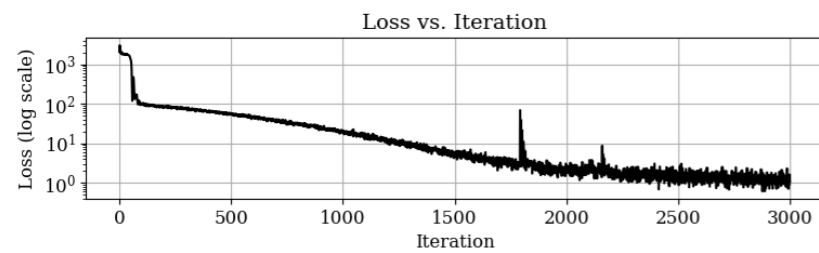
Analytical diffSIM

- In the US (Monday-Wed last week):
 - 1) Discussed next steps with Omar & outlined paper strategy.
 - 2) Merged Physics SIREN with stochastic photon propagation (with broken grads).
 - 3) Fixed grads for stochastic variables.



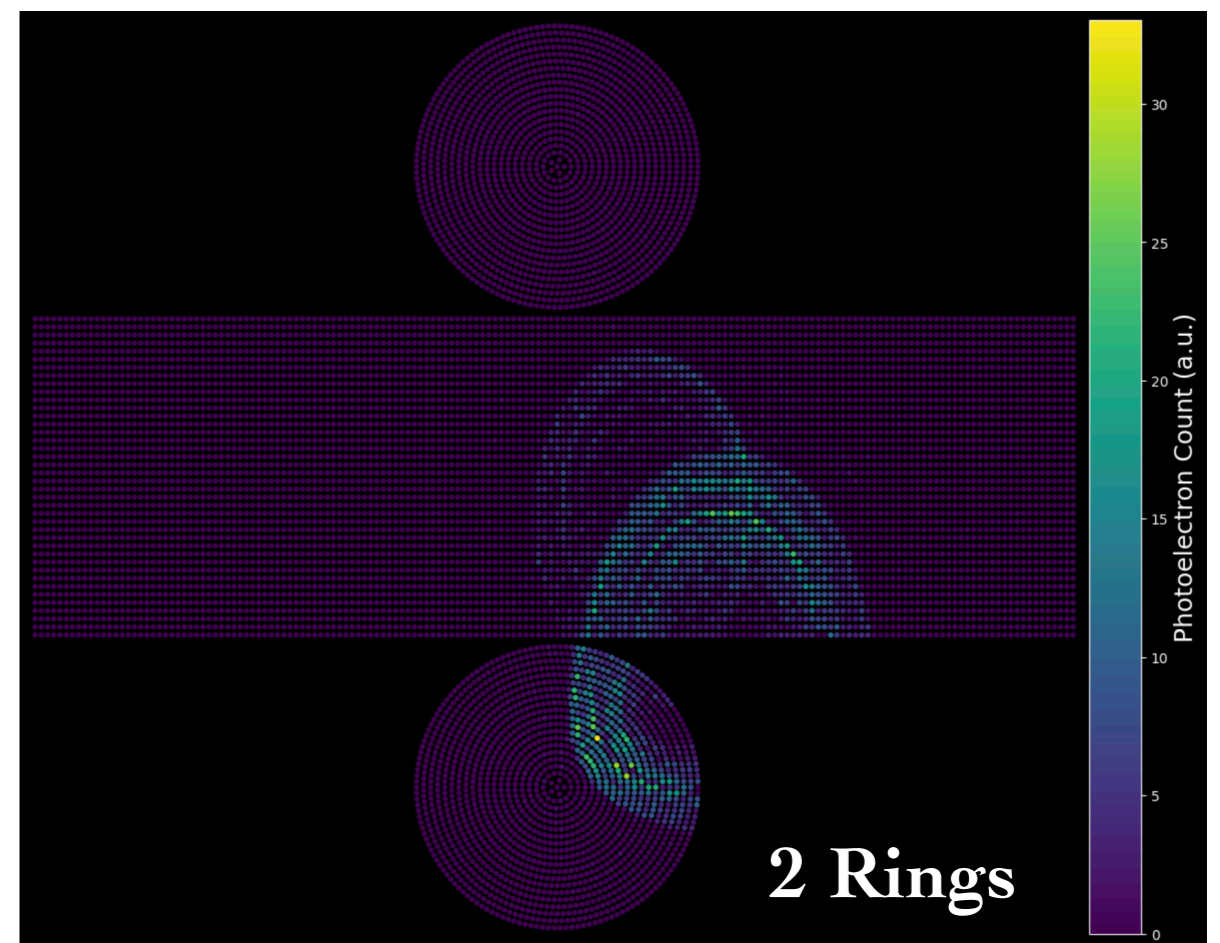
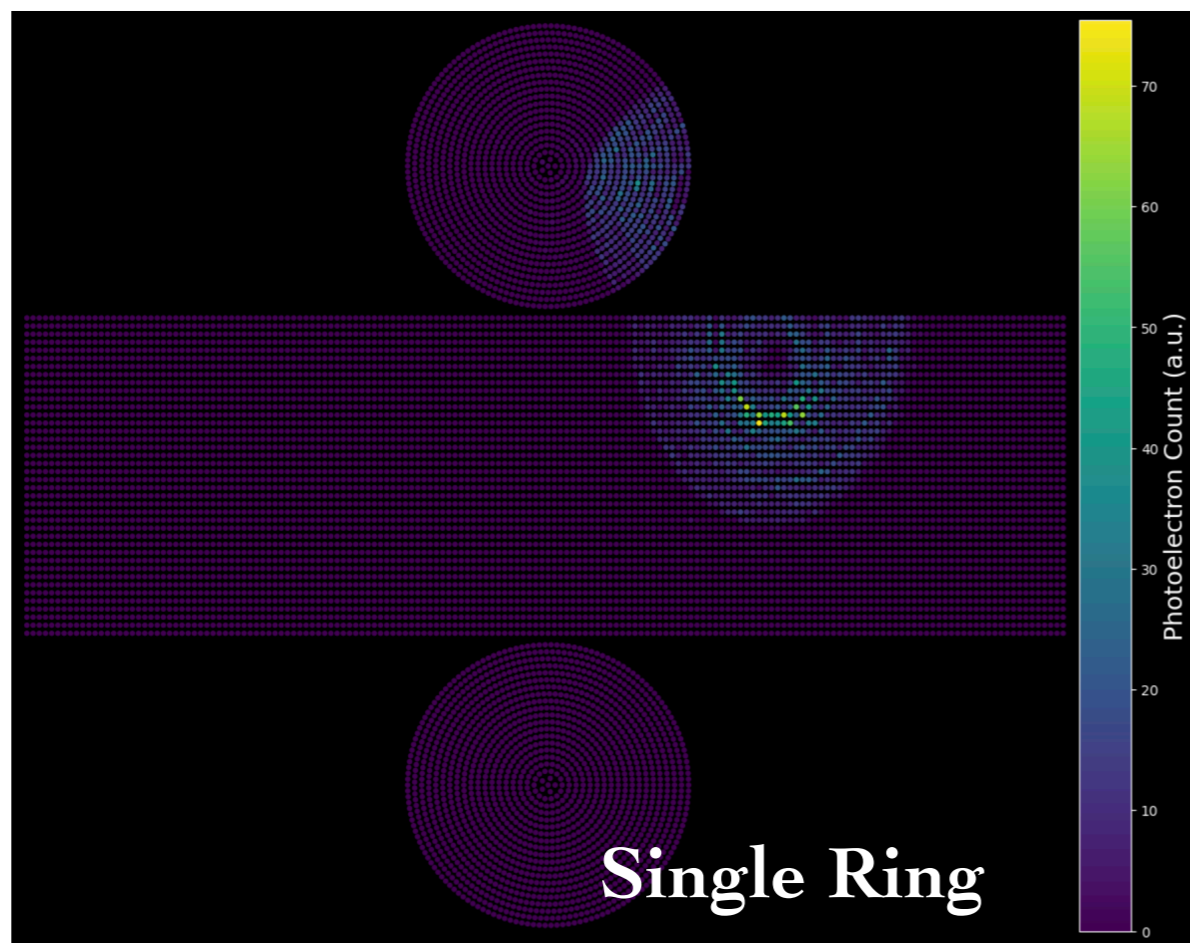
Surrogate diffSIM

- In Japan (Tuesday-Wednesday):
Developed differentiable simulation chain for surrogate project and prepared tutorial notebooks to show how to do simultaneous optimization of all track parameters.



Surrogate diffSIM

- In Japan (Thursday-Friday):
Discussed with Kazu about data Olympics datasets. Matsumoto updated WCsim to save photon-by-photon position & direction information. Added forward pipeline to inject WCsim output in the analytical diffSim. Worked on code performance. Implemented multi-ring events functionality by superposition.



Next Steps

- Generate final datasets. Include Poisson fluctuations.
- Validate analytical diffSim (ADS) optimization using closure tests.
- Use ADS on single ring datasets to study reconstruction performances.